PATENT SPECIFICATION

Application Date: Sept. 13, 1928. No. 26,239/28. **314,724**

Complete Left: Dec. 15, 1928.

Complete Accepted: July 4, 1929.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Automatic Sprinklers for Fire-extinguishing Purposes.

We, ROBERT ARNOLD BLAKEBOROUGH and JOHN BLACK, both of Woodhouse Works, Brighouse, in the County of York, both British Subjects, do hereby declare the nature of this invention to be as follows:—

Our invention in or relating to automatic sprinklers has reference particularly to "fusible plugs" employed in connection with automatic fire extinguishing apparatus, to release a supply or jet of extinguishing medium when a certain temperature is attained in the vicinity of the apparatus.

The invention has for its principal object to provide an improved and simplified construction of fusible plug, which will not only come into operation with certainty when called upon to function, but will also be of especial service where a clear uninterrupted jet of extinguishing medium is required, as for instance when the medium consists of Carbon Tetra Chloride. A further object is to so construct the plug as to permit of easy and quick replacement of the valve or stopper and fusible member, when necessary.

According to the invention there is secured over the end of the pressure pipe, through which the medium is to be supplied, a nozzle member in the form of a short sleeve bored out for a suitable distance at one end to receive the pressure pipe. At the base of this bored out portion an axial nozzle passage of relatively small diameter and of suitable length is provided, the inlet end of which is preferably tapered or flared at a suitable angle. At the outlet end of the sleeve the nozzle passage is enlarged to form a chamber extending to the end of the sleeve, the outer end of the chamber being chamfered off annularly to form a seating.

The outer end portion of the sleeve is screwed externally to receive a thimble, carrying a plug or stopper shaped and ground at its inner end to seat itself against the annular face on the nozzle member or sleeve, and a fusible retainer for the plug or stopper.

This fusible retainer may be constituted in various ways. In one form the end of the thimble has an axial opening somewhat larger in diameter than the plug or stopper, and a thin copper or other metal disc is soldered to the outer end face of the thimble with metal designed to fuse at the required temperature. As the thimble is screwed on to the sleeve therefore, the plug or stopper is forced up against its seat. In another form, a loose fusible disc is positioned between the end of the sleeve and an inwardly extending shoulder on the thimble. The plug or stopper is in this case also forced to its seat by screwing on of the thimble, the latter having as before an axial opening in its end to permit of the driving away of the plug when fusing of the retainer occurs. This arrangement has the advantage that it eliminates the necessity for soldering the plug to the thimble. In still another arrangement, the axial opening in the end of the thimble is arranged to taper outwardly and the plug is held in position in this opening by soldering with fusible metal.

Any other convenient method of holding up the plug or stopper to its seat by means of a thimble having associated with it a fusible retainer may be substituted for the arrangements specifically mentioned, the essential feature being the enlargement of the nozzle passage into a chamber over the end of which the plug is seated. A relatively large surface is thus afforded on which the pressure can act, and when the plug has been blown away, on fusing of the retainer, the jet of extinguishing medium passes straight from the end of the nozzle passage without coming into contact either with the wall of the chamber or with the surface of the axial opening in the thimble end, through which the plug is expelled.

Dated the 12th day of September, 1928.

BARRON & LEWIN,
Station Street Buildings, Huddersfield,
Agents for the Applicants.

[*Price* 1/-]

COMPLETE SPECIFICATION.

Improvements in or relating to Automatic Sprinklers for Fire-extinguishing Purposes.

We, ROBERT ARNOLD BLAKEBOROUGH and JOHN BLACK, both of Woodhouse Works, Brighouse, in the County of York, both British Subjects, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Our invention in or relating to automatic sprinklers has reference particularly to "fusible plugs" employed in connection with automatic fire extinguishing apparatus, to release a supply or jet of extinguishing medium when a certain temperature is attained in the vicinity of the apparatus.

The invention has for its principal object to provide an improved and simplified construction of fusible plug which will be of especial service where a clear uninterrupted jet of extinguishing medium is required, as for instance when the medium consists of Carbon Tetra Chloride. A further object is to so construct the plug as to permit of easy and quick replacement of the valve or stopper and fusible member, when necessary.

It is known to provide on the end of a supply pipe a sleeve having the outer end portion of its bore enlarged to form a seating for a closing plug, such plug being held in position by means of a fusible retainer. As hitherto constructed, however, these devices have not made provision for the discharge of an uninterrupted jet of medium.

According to our invention we employ a sleeve on the supply pipe having an enlargement of its bore at the outer end and we arrange to close this bore by means of a plug held up by a thimble and a fusible retainer, but the construction of the thimble and retaining means is such that on fusion taking place the plug can be blown clear away through an axial opening in the outer end of the thimble of greater diameter than the plug.

In the accompanying drawing,

Figs. 1 to 4 are sectional elevations of a device according to the invention, showing various forms which the fusible retainer may take.

Fig. 5 is a plan view of the construction shown in Fig. 4.

Referring to the drawing, *a* represents the pressure pipe, and *b* a nozzle member screwed on to the end of same, directly in Figs. 1, 2 and 3, and in the case of Fig. 4 on to a nipple a^1 secured on the pipe end. The axial nozzle passage is shown at *c*, the inlet end of the same being flared as at c^1. The chamber formed at the outlet end of the nozzle member, by enlargement of the nozzle passage is indicated at *d*, and a plug member *e* suitably tapered at its upper or inner end is adapted to seat itself against a chamfered annulus around the lower end of the chamber.

In Figs. 1 to 3 the plug member is shown as being held in position by means of a thimble *f* screwed on to the lower end of the nozzle member and carrying a fusible retainer for the plug.

In Fig. 1 the thimble is shown as having an axial opening f^1 of somewhat larger diameter than the plug and a thin copper or other metal disc *g* is soldered to the outer end face of the thimble with metal designed to fuse at the required temperature. As the thimble is screwed on to the sleeve, the plug or stopper is forced against the annular seat surrounding the lower end of the chamber *d*. The plug will preferably be soldered or otherwise secured to the disc *g*, so that as the thimble is screwed home the plug will be rotated against its seat.

In Fig. 2, a loose fusible disc *h* is positioned between the end of the plug or stopper and an inwardly extending shoulder f^2 on the thimble. The plug or stopper is in this case also forced to its seat by screwing on of the thimble, the latter having as before an axial opening in its end to permit of driving away of the plug when fusing of the retainer occurs. This arrangement has the advantage that it eliminates the necessity for soldering.

In the arrangement shown at Fig. 3, the axial opening in the end of the thimble is tapered outwardly and the plug is held in position in this opening by soldering with fusible metal.

In the arrangement shown at Figs. 4 and 5, the thimble has an annular groove f^3 in which the heads i^1 of a pair of depending links or fingers *i* are adapted to be held by a clamp or collar *j* of fusible metal. The lower ends of the links are upturned in hook form, and are engaged by the bent-over ends of a strap member *k*.

Screwing up of the thimble causes the plug, the lower pointed end of which rests on the strap *k* to be forced up to its seat, and the thimble can be locked in adjusted position by a lock nut *m*. When the collar or clamp *j* fuses, the pressure on the upper end of the plug and thus on the strap *k* causes the upper ends of the links to fly outwardly and thus release the plug.

The construction described and shown affords a relatively large surface on which the pressure can act, and when the plug has been blown away on fusing of the retainer, the jet of extinguishing medium passes straight from the end of the nozzle passage *c* without coming into contact either with the wall of the chamber *d* or with the surface of the axial opening in the thimble end through which the plug is expelled.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A device for the purpose specified, comprising a nozzle member secured on the end of a pressure pipe, said nozzle member having an axial nozzle passage enlarged at its outer end to form a chamber, a plug or stopper held against a seating at the outer end of the said chamber by an adjustable thimble screwed on to the nozzle member and having at its outer end an axial opening larger than the plug, and a fusible retainer associated with said thimble enabling the same to exert pressure on the plug in such manner that when fusing of the retainer occurs, the plug will be blown clear of the passage way and permit of the expulsion of an uninterrupted jet of medium, substantially as set forth.

2. A device according to Claim 1 having a constructional form as described with reference to, and as illustrated by, any of the Figures of the accompanying drawing.

Dated the 14th day of December, 1928.

BARRON & LEWIN,
Station Street Buildings, Huddersfield,
Agents for the Applicants.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1929.

[This Drawing is a reproduction of the Original on a reduced scale]

Fig. 1.

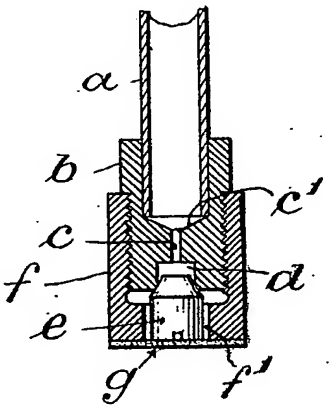


Fig. 2.

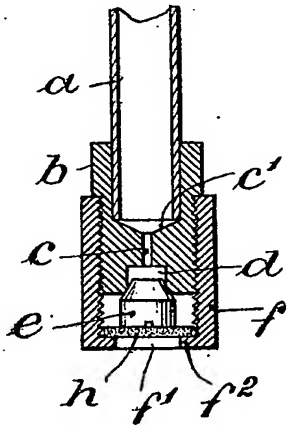


Fig. 3.

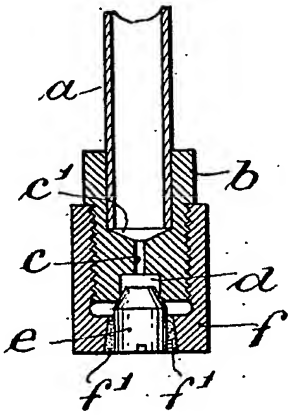


Fig. 4.

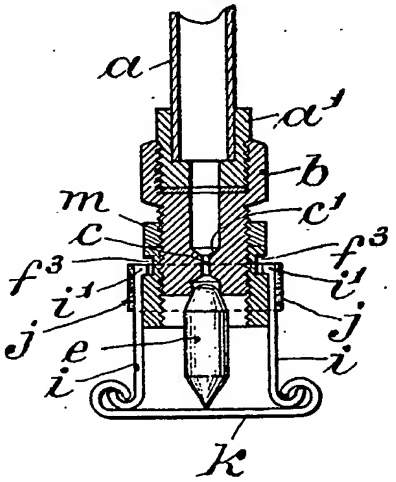
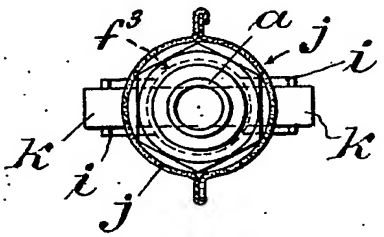


Fig. 5.



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